App. No. 10/825,033
Office Action Dated November 25, 2005

REMARKS

Favorable reconsideration of this patent application is respectfully requested in view of the following remarks. Claims 11 and 12 have been amended to correct formal matters only, and particularly are amended to correct claim dependencies. Applicant respectfully submits that no new issues are raised by such amendment and that no new matter has been added. Claims 1, 2-3, 6, and 9-12 are pending.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie et al. (U.S. Patent No. 6517642). Applicant respectfully traverses this rejection.

Claim 1 recites a method for forming a ferroelectric thin film, and includes (1) forming a seed layer containing an ultra-fine particle powder comprised of an element constituting the ferroelectric thin film and being present in the seed layer with a concentration in the range of 0.00001 wt% to about 1 wt%, and (2) forming the ferroelectric thin film on the seed layer.

Horie et al., however, does not disclose or suggest the features required by claim 1. Horie et al. does not teach or suggest (1) forming a seed layer containing an ultra-fine particle powder comprised of an element constituting the ferroelectric thin film, or (2) forming the ferroelectric thin film on the seed layer. Rather than forming a seed layer, Horie et al. produces a thin film of metal or metal compound by coating a substrate with a fine particle dispersion, removing the solvent, and then annealing the particles to form a uniform film. In fact, Horie et al. does not form any seed layer. Therefore, the method of Horie et al. is different from the claimed invention.

Horie et al. is further distinguished from the claimed invention, because the ultrafine particles disclosed in Horie et al. are different from that in the claimed invention. Claim 1 recites a seed layer containing ultra-fine particle powder comprising an element constituting the ferroelectric thin film. However, Horie et al. discloses ultrafine particles as composite ultrafine articles each comprising a metal core (ultrafine metal) article covered with organic materials (Col. 2, lines 48-48), where the ultrafine particle dispersion liquid applied to the substrate is dried to evaporate the organic solvent of the ultrafine particle dispersion liquid, leaving only the ultrafine particle on the substrate (Col. 5, lines 33-36). Thus, the organic materials employed by Horie et al. could not be an element constituting the ferroelectric thin film required in claim 1, because it appears the organic solvent is evaporated. This is further supported in that Horie et al. teaches that, when a thin film of metal oxide is to be produced, the melted and joined metal particles are annealed in an oxidizing gas atmosphere (Col. 6, lines 6-11.) Similarly as with a metal oxide,

Horie et al. produces a thin film of metal sulfide and metal nitride except in a hydrogen sulfide atmosphere and nitride atmosphere respectively. (Id.) Therefore, Horie et al. does not teach or suggest any ultra-fine particle powder comprised of an element constituting the ferroelectric thin film.

Moreover, claim 1 is distinguished from Horie et al., because claim 1 requires that the ultra-fine particle powder be present in the seed layer with a concentration in the range of 0.00001 wt% to about 1 wt%. Horie et al., however employs a different process in which a continuous metal layer is formed upon melting. There is no reasonable basis to assume that Horie et al. could form its thin film through melting by using such low particle concentrations. Therefore, Horie et al. does not teach the required concentrations of claim 1, and in fact leads one away from such concentrations.

For at least the foregoing, Horie et al. does not teach or suggest the features required by claim 1. Therefore, Applicant respectfully submits that claim 1 and dependent claims therefrom are patentable over Horie et al.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

Claims 6 and 9 are respectively rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (EP 940856) in view of Horie et al. and over Kim (USPN 6020233) in view of Horie et al. Applicant respectfully traverses these rejections.

These rejections rely on Horie et al. for the same basic teaching as the rejection of claim 1, and are incorrect for the same reasons already noted.

Withdrawal of the rejections are respectfully requested.

In view of the above, Applicant believes that the pending claims are allowable. Favorable reconsideration in the form of a Notice of Allowance is requested. Any questions regarding this communication can be directed to the undersigned attorney.

Respectfully Submitted,

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